

Active Learning Strategies

Find the error: The instructor prepares a set (10-25) of one-line statements pertaining to the day's assigned material. Each contains an inaccuracy which students are to identify and change. Rather than a knowledge-level focus, such as changing a lab value or vital sign from increased to decreased; the statements address higher order thinking. A statement might be, The nurse is aware the drug Lactulose (Cephulac) is having the intended effect, when the patient with progressed liver disease has daily bowel movements. A better choice would be, The nurse is aware the drug Lactulose (Cephulac) is having the intended effect when the patient with progressed liver disease has reduced serum ammonia levels or improved neurological status, although the drug does provide a laxative result.

What's my _____ [line]? This active learning strategy is based on a television show. Depending on the selected topic, a panel of perhaps 4-8 students is placed in front of the classroom, with the remainder serving as contestants. Each panel member represents an individual with a specific disease, condition, or health problem related to the assigned reading for that day. Another approach is for the panel to represent an inanimate object such as a medication or a diagnostic test. Panel members can be volunteers, or selected by the instructor, with each having a cue card to promote accurate answers. Class members ask a yes/no question to any panel member to establish which person has which problem. For example, What's my opportunistic infection? Entails eight students assigned a specific condition associated with HIV/AIDS (e.g., pneumocystis carinal pneumonia, cytomegalovirus retinitis, oral candidiasis). The class has eight infections listed and then in an allotted amount of time, questions the panel members about clinical signs, symptoms, and/or medications to determine the association. The cognitive skills related to critical thinking for active learning strategy are analysis through examination of each panel members and draw conclusions, along with interpretation such as categorizing signs, symptoms and perhaps nonverbal cues relayed by the panel.

Student-generated test: With this active learning strategy, each student is assigned a specific topic about which to develop a multiple choice question, including rationale for the correct response. As a component of the anticipatory set for the subsequent class, each student's question is emailed to the instructor by a determined deadline. All questions are compiled and presented to the class in a choice of formats: one-by-one, or in total as a mock test. When the correct answers and rationale are provided, the instructor facilitates further knowledge acquisition through fielding students' additional questions about the subject. This teaching-learning method can be used for a review of material prior to the actual exam, or as an assessment measure for a particular class related to the assigned reading.

Notable quote: The instructor provides a quote and the class writes a short essay linking the assigned subject to the citation in a designated time frame (five minutes or longer). Following are several examples: An ounce of prevention is worth a pound of cure related to the topic of hypertension; Laughter is the best medicine in relation to research on the benefits of humor therapy; and The apple doesn't fall far from the tree pertinent to familial traits or genetic aspects of an illness. This activity can serve as a pre- or post-test measure of learning comprehension, or with multiple quotes, serve as a review before an exam. With the quote related to hypertension, the cognitive skill of analysis can be demonstrated through student arguments that maintaining ideal body weight may not only reduce the incidence of high blood pressure, but other medical problems as well. The use of inference may include discussing the role of stress management in relation to avoidance of hypertension. Explanation and interpretation could be evident through writing about the complications and pathologic causative effects on blood pressure due to smoking.

* Adapted from Bowles, D.J. (2006). Active learning strategies...not for the birds! International Journal of Nursing Education Scholarship, 3(1), 1 – 11.

Comic strip connection: This activity is essentially the same as posting a quote, however a comic strip or cartoon is used that has a relationship to the day's assignment. Humor reduces anxiety and tension, helps students focus their attention, makes learning fun, increases learning and memory and strengthens social relationships (Ulloth, 2003). Additionally, This [humor] reduces the authoritarian position of the teacher, allowing the teacher to be a facilitator of the learning process in partnership with students (Watson & Emerson, 1988, p. 89).

For example, in one comic strip, a woman asks another, does [your husband] have trouble falling asleep at night? She answers, no as a matter of fact he sleeps like a baby. In next frame, the wife continues with, It's probably because he has a bottle before he goes to bed every night. The comic strip shows a man deep asleep in a recliner, holding a cup with an empty container of liquor nearby. The students would be asked to analyze the cartoon in reference to sleep apnea. Specifically what risk factors does the character demonstrate (middle-age, male, obesity, alcohol intake prior to sleep) and what education could the nurse provide concerning this condition? (lifestyle changes, diagnostic testing such as sleep studies, potential need for teaching of continuous positive airway pressure equipment).

Reverse bingo: With this exercise, the students receive a hard copy of a grid with 25 squares to mimic a bingo card. Rather than calling out a word, the instructor provides a question, a description or statement pertaining to a concept and the students look for the answer on their individual paper. Only one student in the class has all 25 correct responses; however, most have the majority. The topic can be very general such as presenting age-related health screenings, or more specific such as medications used to treat tuberculosis. The cognitive skills related to critical thinking for this active learning strategy are analysis and inference. If the bingo focused on anti-tuberculin drugs, the teacher could ask how the nurse would evaluate the expected outcome of using Pyridoxine (Vitamin B₆). Students generally gravitate towards looking for an improved metabolic or nutrition-based response on the bingo sheet. However, the correct choice is prevention of peripheral neuropathy caused by the drug Isoniazid (INH). Additional Socratic questions assist the students to grasp this concept through the use of analysis and inference.

Posting a pyramid: Students form small groups and are provided with a poster board, tape and markers. A large collection of pictures of food from magazines, grocery store ads, and/or actual food labels are available in the room, preferably spread out on a tabletop. Each group is to design a poster based on the Food Guide Pyramid, illustrating three well-balanced meals for a designated situation. One group may be planning meals for a lactose intolerant elderly person, another for a family of four on a \$15 a day budget, a vegan college student, a pregnant adolescent, etc. a time allotment for completing the project is announced and afterwards, each group has five minutes or so to share the outcome of the project with classmates. This activity can also be used for special diets related to diseases such as diabetes or renal failure. The cognitive skills of analysis, inference, explanation and interpretation are implemented as students have the task of examining the health problem in relation to the resources and limitations posed and expressing knowledge in a visual format.

Making a mnemonic: This activity was inspired through observing student recall of information in the clinical area, along with a purchased teaching aide used sporadically in the classroom. Various pages from Zerwekh, Claborn, & Miller's (2000) Memory Notebook of Nursing were used by this author as a visual prompt for students during class instruction. Student feedback was that these mnemonics were a helpful learning measure. In addition, it became increasingly apparent in the clinical environment how students used mnemonics to organize thoughts when providing client care. Students often verbalize the 5 Ps (presence of pain, pallor, paresthesia, pulse, and pressure) as a component of assessing and/or documenting neurovascular status.

* Adapted from Bowles, D.J. (2006). Active learning strategies...not for the birds! International Journal of Nursing Education Scholarship, 3(1), 1 – 11.

Active Learning Strategies for Lecture

Questions: One of the predominant active learning methods is questioning students during a lecture. Questions can be answered by students individually or in small groups. Questions should assist students in clarifying their understanding of the information presented in the lecture, applying it to clinical practice, examining different perspectives and alternative approaches, and relating the readings and other activities to the lecture topic. In most instances the intent is to ask thought-provoking questions that encourage students to think beyond the obvious rather than questions that ask for recall of facts and specific information. An advantage of using questions for active learning is that questions are an effective method for promoting critical thinking about the content (Oermann, 1997, 1998; Oermann, Truesdell, & Ziolkowski, 2000).

One Minute Question and Answer: This active learning strategy is intended for use either with the class as a whole or in pairs of students. The intent is to clarify difficult concepts presented in the lecture and review key points. In this strategy the teacher poses a question about the lecture content. Each student has one minute to think about the answer, followed by students reporting on their answers and the teacher providing immediate feedback on their accuracy. As a small group activity, students have one minute to explain their answer to the person sitting next to them or to a small group, with peers confirming accuracy or raising new questions about the content.

Discussion: Another active learning method that can be integrated within a lecture is a structured discussion about the content. Discussions promote problem solving, decision making, and critical thinking, and in small groups encourage cooperative learning process skills (Crabtree, Royeen, & Mu, 2001; Gaberson & Oermann, 1999). Small group discussions at the end of lecture are particularly appropriate for assisting students to apply the content presented in the lecture to patient care. In planning a discussion the teacher should be clear about its intended goals, for example, to review the content presented in class examine how that content is used in clinical practice, compare the lecture with students' readings and own experiences with patients, and examine approaches not presented in the lecture that might be equally effective.

Short Case Analysis: Short cases within a lecture are valuable for applying concepts from lecture to clinical practice and developing ability to problem solve and think critically. Cases provide an opportunity for students to integrate and apply clinical and basic science knowledge to simulated situations (DeMarco, Hayward, & Lynch, 2002). In this way cases help bridge the gap between theory and practice.

Students can identify problems in cases, develop multiple approaches to solving them, discuss different points of view and assumptions they made about the situation that influenced their thinking, and propose alternate decisions that might be possible, weighing the consequences of each. Tomey (2003) reviewed the literature on the use of cases in nursing education and found that case methods led to the development of problem solving and critical thinking skills. When cases are analyzed in small groups, students become more comfortable in face-to-face communication, learn how to promote their ideas in groups and give feedback to others, and learn about individual and group accountability (Baumberger-Henry, 2003).

Cases have two components: a short case for analysis by students and questions to discuss about the case or as a result of the analysis. The case should apply concepts from lecture to simulated situations or clinical scenarios and should be short to avoid directing the students' thinking and discussions in a particular way. Questions should be open-ended and ask for alternatives rather than one possible answer. Cases analyzed in small groups allow for sharing of responses so students can learn from each other. Box 1 provides examples of short cases for active learning.

* Adapted from Oermann, M. H. (2004). Using active learning in lecture: Best of "both worlds". *International Journal of Nursing Education Scholarship*, 1(1), 1–9.

Writing as Active Learning: Active learning strategies not only encourage critical thinking but also can be used to help students develop writing skills (Oermann, 1997; Richardson & Trudeau, 2003). Students can work in pairs or small groups to complete short and focused writing assignments about the content presented in the lecture. With many of these assignments, only one to two paragraphs are necessary. Keeping the writing activity short assists students in focusing their writing and avoids their summarizing from other sources without thinking critically about the information. Richardson and Trudeau (2003) used problem-based and collaborative learning in the classroom to develop undergraduate students' writing skills. Focused writing assignments encouraged students to think critically and independently and to improve their writing skills. Students also learned to work collaboratively with peers and communicate their ideas effectively to an audience.

Concept Map: A concept map is a graphic or pictorial arrangement of key concepts or ideas that help students visually connect information (Gaberson & Oermann, 1999). While often used in clinical teaching, students may develop concept maps from their readings to assist them in linking new facts and concepts to information already learned. Then as part of the lecture, students can work in small groups to review and compare their concept maps, and discuss new links between the lecture and their map. In this way concept maps are useful in encouraging students to prepare for class and complete their readings and other out-of-class assignments. As an alternate at the end of a lecture, students can work in small groups to develop a concept map about the lecture, drawing on their readings for its development. Activities such as these enhance critical thinking, learning from one another, and group process. If students present the results of their discussions to the class, teachers can provide immediate feedback.

* Adapted from Oermann, M. H. (2004). Using active learning in lecture: Best of "both worlds". *International Journal of Nursing Education Scholarship*, 1(1), 1 – 9.